

EXHIBIT 11

Look to NIBCO®

What is Dezincification? Why Should It Be Important to You?

Bronze and brass are not the same materials! Brass alloys can have a 35-40% zinc content. De-alloying corrosion, also known as dezincification, occurs in valve components containing more than 15% zinc. The leaching of zinc from the brass alloy creates porous copper which results in the loss of physical strength in the brass alloy material, subjecting valves to potential failure.

The Problem

Valves with
High-Zinc Content

Know the Signs
of Dezincification

Dezincification was effectively eradicated from valve products in the 1950s. Today however, this problem has returned due to:

- Increased use of high-zinc alloys in forged and cast ball and gate valves produced outside the United States
- Increased aggressiveness of today's water supplies and water treatment technologies
- Presence of zinc oxide, a loose adhering white deposit on outside of valve
- Presence of mineral stains on outer surface of valve
- Water weeping from valve body, stem/bonnet seal or threaded end



Dezincified ball valve



Dezincification Resistant



Sample Ball Valve Specification

Ball Valves Valves shall be rated 150 psi SWP and 400 psi CWP and will have 2-piece full port cast bronze bodies (ASTM B 61, ASTM B 62, or ASTM B 584 Alloy C84400) (NO YELLOW BRASS containing more than 15% zinc), PTFE seats and seals, separate packing nut with adjustable stem packing, anti-blowout stems and stainless steel ball and stem (or chrome-plated ball and bronze stem). Valves shall conform to MSS SP-110.

NIBCO T-585-70-56 or approved equal

Notes: Where piping is insulated, valves shall be equipped with 2" extended handles of non-thermal conductive material. Provide a protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation. Supply valves with memory stops, which are fully adjustable after insulation is applied.



Dezincification Resistant

Specifying Engineer Checklist

Check submittal material lists and specifications carefully:

- Zinc content of materials not to exceed 15%
- Check catalog cut sheets and submittals for ASTM numbers and other alloy designations
- Check with manufacturers if unsure of zinc content, country of origin or batch traceability
- Brass and bronze are NOT the same materials
- Brass alloys can have a 35-40% zinc content

All Alloys are NOT Alike...

Common Alloys*	ASTM #	% Copper	% Zinc
Forged Brass	B 229	20	80
Free Cutting Brass	B 16	36.1-39	35-5
Forged Yellow Brass	B 122	60	38
Free Stream Bronze	B 61	88	4-5
Composition Bronze	B 62	65	4
Copper-Nickel Alloy	B 69	56	3-5
Brass Alloy (C84400)	B 584	81	5
Aluminum Bronze	B 148	82	0
Aluminum Brass	B 371	87-91	1-6

* List is not comprehensive

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The Solution

Tighter Specs...

Specify NIBCO bronze valves with one of the following alloys:

- ASTM B 61 (4.5% zinc)
- ASTM B 62 (5% zinc)
- ASTM B 584 (8%-12%) Alloy C84400

Stay Informed...

Require manufacturers to provide alloy designation or chemistry for the materials used in their valves and fittings



Dezincified gate and check valve